

Response to Intervention in Secondary Schools

Title 1 Conference, 2011

Jean Howard

OPI, Mathematics Curriculum Specialist

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“Response to Intervention is a framework that is expected to lead to better teaching and learning. Unlike other educational initiatives, RTI provides an umbrella under which numerous research-based practices can be brought to bear to improve student learning.”

How RTI Works in Secondary Schools, Evelyn S. Johnson, Lori Smith, Monica L. Harris, Corwin, 2009

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***Foundations for Success: The Final Report of the
National Mathematics Advisory Panel, U.S.
Department of Education: Washington, DC, 2008***

- The President created the National Mathematics Advisory Panel in April 2006, with the responsibilities of relying upon the “best available scientific evidence” and recommending ways “...to foster greater knowledge of and improved performance in mathematics among American students.”
- March 2008 The Panel’s Final Report contains findings that give directions and concrete steps for the long process of improving mathematics education.

<http://www.ed.gov/MathPanel>

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The essence of the Panel’s message is *to put first things first*. The six elements are:

Curriculum	<ul style="list-style-type: none"> • streamlined • emphasize a well-defined set of the most critical topics
Learning	<ul style="list-style-type: none"> • the advantages for children in having a strong start; • benefits of conceptual understanding, procedural fluency, and automatic recall of facts • not just inherent talent, counts in mathematical achievement
Teachers	<ul style="list-style-type: none"> • importance of having mathematically knowledgeable classroom teachers • attracting and appropriately preparing prospective teachers, • evaluating and retaining effective teachers
Instruction	<ul style="list-style-type: none"> • informed by high-quality research, • by the best professional judgment and • experience of accomplished classroom teachers
Assessment	<ul style="list-style-type: none"> • improved in quality • increased emphasis on the most critical knowledge and skills leading to Algebra.
Research	<ul style="list-style-type: none"> • build capacity for more rigorous research in education • inform policy and practice more effectively

Curriculum must simultaneously develop conceptual understanding, computational fluency and problem-solving skills

- Not sequential or lock step or silos
- Mutually supportive, facilitating learning of the others
- Emphasize these interrelations
- Jointly support effective and efficient problem solving

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Interventions can improve underrepresented groups

- Address social, affective and motivational factors
- Provide social and intellectual support from peers and teachers
- Reduce achievement gaps

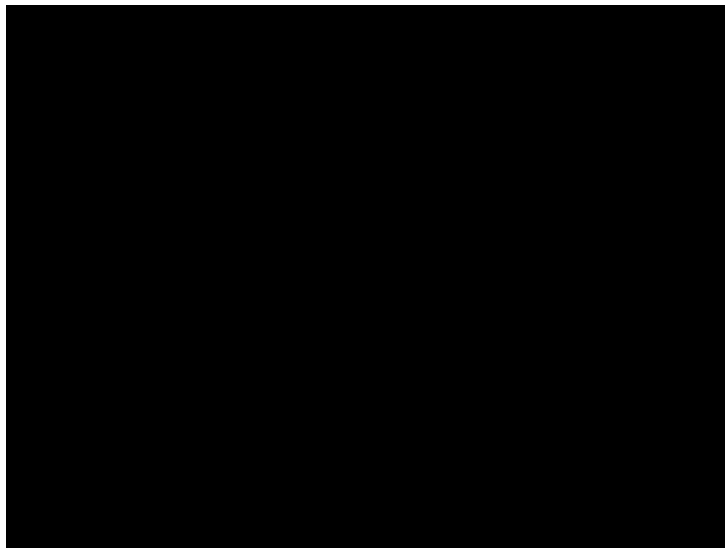
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Beliefs about learning are related to mathematics performance

- When children believe efforts to learn make you smarter, they show greater persistence
- Engagement and efficacy are changeable factors
- Teachers and others should consistently help students and parents understand that an increased emphasis on the importance of effort is related to improved mathematics performance. (Erroneous idea that success is largely a matter of inherent talent or ability, not effort)
- TRY IT. YOU'LL LIKE IT!

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Jessica's Daily Affirmation



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Instructional Practices

- “Student centered” or Teacher directed” not support the exclusive use of either approach
- Team Assisted Individualization shown to improve students’ computation skills
- Regular use of formative assessment improves students’ learning
- “Real-world” problems improve performance on “real-world” problems

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Instructional Practices

- Explicit instruction shown positive effect
 - Teacher explains and demonstrates specific strategies (note this is not algorithms or procedures only)
 - Teacher allows students to ask and answer questions and think aloud
 - Careful sequencing of problems to highlight critical features.
- Direct instruction
 - Scripts with frequent interaction between students and between students and teacher
 - Clear feedback given to students in timely manner
 - Sequencing of problems to highlight critical features

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- “This process of buying into the belief that you need a program in order to be effective – it really is making our teachers think they can’t think, and that they shouldn’t think. They think teaching is about following directions.”
 - David Allsopp, University of South Florida

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Instructional Practices

- Well designed and implemented computer assisted instruction (CAI) combined with drill and practice can have positive impact particularly at middle and high school.
 - Critically examine evidence of effectiveness with similar students in specific topic
 - Critically examine student package of software
 - Necessary components
 - Sufficient hardware and software
 - Technical support
 - Adequate professional development
 - Plan for implementation
 - Curriculum integration

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Purpose of RTI at Secondary Level

- Build Capacity
 - Schools can meet the demands of a diverse student population
- Intervention
 - Support students at risk for dropping out of school
- Continuous School
 - Better teaching and learning through an integrated system

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Tier 1 at Secondary Level

- Systemic, structural processes and instructional program
- Schoolwide positive behavior support
- Model practices of effective middle and high schools

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Tier 2 and 3

- Enhance and supplement Tier 1
- Proverbial “safety net” for those who need explicit and intensive strategy instruction
- Targeted strategy instruction
- Continuous monitoring
- Continuous collaboration and communication
 - Administration
 - Teachers
 - parents

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Evidence-based interventions

- Effective for targeting student needs
 - Standard Protocol Approach
 - More prescribed with detailed steps
 - Potential drawback of “one-size-fits-all”
 - Strategy Instruction Approach
 - Explicit instruction with extensive practice
 - Potential drawback – isolation of content, lack of application, disconnect from core program
 - Problem-Solving Approach
 - Designed to address specific need, flexible and adapted to student engagement, apply skills, relevant
 - Drawback - takes time

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Students engaged in solving problem.



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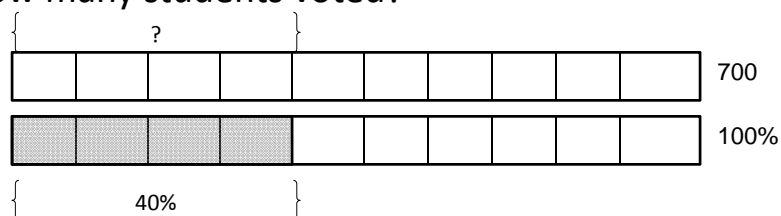
Vocabulary

- List key terms after a lesson to put in context
- Share list at table to promote thinking aloud
- Define using sources such as [Visual Thesaurus](#)
- Word wall created by students

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Visual models to solve percent problems

- Forty percent of the 700 students in the school voted today.
- How many students voted?



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20% off! What is New Price?

- The Sports store is having a sale with 20% off of all clothing. What is the cost of a shirt that originally cost \$40?
 - What do you need to determine?
 - Use a visual model to solve the problem.

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Modeling with Tape Diagrams

- A theme park charges different prices for adult and child passes.
 - Francis bought 2 adult and 4 child passes for \$197.
 - Anita bought 4 adult and 6 child passes for \$345
- How much does each type of pass cost?

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Connect Tape Diagrams to Numerical Methods

- Francis bought 2 adult and 4 child passes for \$197.
- Anita bought 4 adult and 6 child passes for \$345.
- Visual model of solution
- $2(2A + 4C = 197) \Rightarrow 4A + 8C = 394$
- $4A + 6C = 345 \Rightarrow \begin{array}{r} 4A + 8C = 394 \\ \underline{4A + 6C = 345} \\ 2C = 49 \\ C = \$24.50 \end{array}$

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Francis and Anita at the Park Again

- Francis bought 2 adult and 4 child passes for \$197.
- Anita bought 3 adult and 3 child passes for \$222.

How much does each type of pass cost?

Use tape diagrams to solve the problem.

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Frank and Jim at the Corner Story

- Frank bought two sodas and three hot dogs for \$9.03.
- Jim bought three sodas and one hot dog for \$6.02.

How much do sodas and hot dogs cost?

Use tape diagrams to solve the problem and
connect your diagrams to numerical methods.

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Fractions

- Number line
- Area model
- Tape diagram
- Number line
- Tape diagram
- Numerical

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Thank you for your dedication to all students
learning mathematics!

Jean Howard

Mathematics Curriculum Specialist

- 406-444-0706
- jhoward@mt.gov

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